AMENDMENTS TO THE CLAIMS

1. **(Currently Amended)** A chemically bonded biomaterial element ~~composed of~~ comprising an inorganic cement, exhibiting minimal dimensional changes upon hardening and long-time use, improved mechanical properties and improved translucency, ~~characterised in~~ wherein:

the biomaterial element has a micro-structure to meet an algorithm ~~to describe the micro-structure~~, which is ~~expressed as~~ defined by a formula:

$$\lambda = \frac{d*(1-V_F)}{(V_F)}$$

where λ is the distance between filler particles of mean size d, and V_F is the volume content of non-reacted cement and added filler, and where $\lambda \leq 10$ μm, and

wherein added inert filler particles have a particle size below 5 μm, and

wherein the inert filler particles consist of glass particles, apatites, brucite and/or bohmite.

2. **(Currently Amended)** ~~A~~ The biomaterial element according to claim 1, ~~characterised in that~~ wherein $\lambda \leq 8$ μm~~, even more preferred $\lambda \leq 4$ μm and most preferred $\lambda \leq 2$ μm~~.

3. **(Currently Amended)** ~~A~~ The biomaterial element according to claim 1, ~~characterised in that~~ wherein V_F is less than 50 %~~, preferably 5-45 % and even more preferred 15-35 %~~.

4. **(Currently Amended)** ~~A~~ The biomaterial element according to claim 1, ~~characterised in that~~ wherein it exerts a pressure or tensile force of < 5 MPa[[,]] ~~even more preferred < 2 MPa and even more preferred < 1 MPa,~~ on a surrounding volume.

5. **(Currently Amended)** ~~A~~ The biomaterial element according to claim 1, ~~characterised in that~~ wherein

the inorganic cement ~~phase is composed of~~ comprises Ca-aluminate, ~~and/or~~ Casilicate and~~/or~~ or Ca-phosphate, or a mixture thereof.

6. (**Currently Amended**) A biomaterial element according to claim 1, ~~characterised in that~~ wherein

the inorganic cement ~~phase is composed of phases in the $CaO-Al_2O_3$~~ comprises $CaO-Al_2O_3$ system, ~~i. e. CaO, $(CaO)_3Al_2O_3$, $(CaO)_{12}(Al_2O_3)_7$, $CaOAl_2O_3$, $(CaO)(Al_2O_3)_2$, $(CaO)(Al_2O_3)_6$ and/or pure Al_2O_3 with varying relative contents, where the preferred main phases are $CaOAl_2O_3$ and $(CaO)(Al_2O_3)_2$ and the most preferred main phase is $CaOAl_2O_3$,~~ and

a particle size of formed hydrates of these phases ~~being~~ is below 3 μm~~, even more preferred below1, μm and most preferred below 0.5 μm~~.

7. (**Currently Amended**) ~~A~~ The biomaterial element according to claim 1, ~~characterised in that~~ wherein the biomaterial element ~~it also~~ further comprises an organic phase of ~~preferably~~ polyacrylates and/or polycarbonates ~~and preferably~~ at a volume content of [[<]] less than 5 %.

8-9. (**Cancelled**)

10. (**Currently Amended**) ~~A~~ The biomaterial element according to claim 1, ~~characterised in that~~ wherein it comprises in-situ formed apatite ~~or some other phase~~ that separates the formed hydrates of the main system.

11. (**Currently Amended**) ~~A~~ The biomaterial element according to claim 1, ~~characterised in that~~ wherein a total porosity is below 10 %, ~~even more preferred below 5 %, distributed on~~ where at least 90% of the pores are minipores having a diameter below 0.5 μm~~, even more preferred below 0.1 μm, to an extent of at least 90 % of the total porosity~~.

12. (**Currently Amended**) ~~A~~ The biomaterial element according to claim 1, ~~characterised in that~~ wherein it is a dental material, ~~preferably a dental filling material or a root filling material~~.

13. (**Currently Amended**) ~~A~~ The biomaterial element according to claim 1, ~~characterised in that~~ wherein the biomaterial element contains ~~it is~~ an orthopaedic material or a bone cement.

14. (**Currently Amended**) ~~A~~ The biomaterial element according to claim 1, ~~characterised in that~~ wherein it is a component, or is in granule form, ~~preferably as~~ or in a carrier material for drug delivery.

15. (**Cancelled**)

16. (**New**) The biomaterial element according to claim 1, wherein $\lambda \leq 4$ μm.

17. (**New**) The biomaterial element according to claim 1, wherein $\lambda \leq 2$ μm.

18. (**New**) The biomaterial element according to claim 1, wherein V_F is 5-45 %.

19. (**New**) The biomaterial element according to claim 1, wherein V_F is 15-35 %.

20. (**New**) The biomaterial element according to claim 1, wherein it exerts a pressure or tensile force of < 2 MPa on a surrounding volume.

21. (**New**) The biomaterial element according to claim 1, wherein it exerts a pressure or tensile force of < 1 MPa on a surrounding volume.

22. (**New**) The biomaterial element according to claim 6, wherein the CaO-Al_2O_3 system is CaO, $(CaO)_3Al_2O_3$, $(CaO)_{12}(Al_2O_3)_7$, $CaOAl_2O_3$, $(CaO)(Al_2O_3)_2$, $(CaO)(Al_2O_3)_6$ or pure Al_2O_3 or a mixture thereof.

23. (**New**) The biomaterial element according to claim 6, wherein a main phase of the $CaO\text{-}Al_2O_3$ system is $CaOA1_2O_3$ or $(CaO)(Al_2O_3)_2$.

24. (**New**) The biomaterial element according to claim 6, wherein a main phase of the $CaO\text{-}Al_2O_3$ system is $CaOA1_2O_3$.

25. (**New**) The biomaterial element according to claim 6, wherein a particle size of formed hydrates of these phases is below 1 μm.

26. (**New**) The biomaterial element according to claim 6, wherein a particle size of formed hydrates of these phases is below 0.5 μm.

27. (**New**) The biomaterial element according to claim 1, wherein added inert filler particles have a particle size below 2 μm.

28. (**New**) The biomaterial element according to claim 1, wherein a total porosity is below 5 %, distributed on minipores having a diameter below 0.1 μm, to an extent of at least 90 % of the total porosity.

29. (**New**) A biomaterial element according to claim 12, wherein the dental material is a dental filling material or a root filling material.